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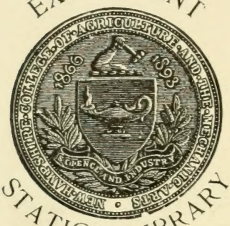
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NEW HAMPSHIRE COLLEGE

AGRICULTURAL EXPERIMENT STATION

INSPECTION OF FERTILIZERS

IN 1904

IN COÖPERATION WITH THE
STATE BOARD OF AGRICULTURE

NEW HAMPSHIRE COLLEGE
OF
AGRICULTURE AND THE MECHANIC ARTS
DURHAM

TRADE VALUES OF FERTILIZING INGREDIENTS IN RAW MATERIALS AND CHEMICALS, 1904.

	Cents per pound.
Nitrogen in ammonia salts	17.5
Nitrogen in nitrates	16.
Nitrogen in dry and fine ground fish, meat and blood, and in high grade mixed fertilizers	17.5
Nitrogen in fine ground bone and tankage	17.0
Nitrogen in coarse bone and tankage	12.5
Phosphoric acid soluble in water	4.5
Phosphoric acid soluble in ammonia citrate (reverted)	4.0
Phosphoric acid in fine ground bone, fish and tankage	4.
Phosphoric acid in coarse bone and tankage	3.
Phosphoric acid in cotton-seed meal, castor-pomace and wood ashes	4.
Phosphoric acid insoluble in mixed fertilizers	2.
Potash as sulphate free from chlorides and in wood ashes	5.
Potash as muriate	4.25

The above values are based on the wholesale market price for the materials, when sold in large lots at the principal trade centers in New England. The valuation of a ton of any mixed fertilizer based on the above figures will usually fall ten dollars below the retail price at the local agency. This variation includes such fixed charges as cost of mixing, bags, cartage and freight, salaries and commissions of agents and interest.

A sharp advance in the price of mixed fertilizers was made this year, due mainly to the advance in the price of nitrate of soda and animal matter.

THE FERTILIZER INSPECTION IN 1904.

One hundred and nineteen different brands of mixed fertilizers were collected and analyzed during the season, together with four lots of ground bone and two of chemicals. Twelve of the mixed fertilizers were later withdrawn from the state by the manufacturers, who preferred to do this rather than license them, and the results of their analysis are not included in the following tables.

The various brands were as a rule well above the minimum guaranteed percentages for the different constituents. Five brands were sufficiently low to affect their value. Nineteen brands had deficits in one constituent offset by excesses in others, which more than maintained their value. The deficits were about equally divided between nitrogen and potash, with but one in available phosphoric acid.

An important feature of the chemical analysis was the marked increase in the proportion of nitrate of soda in many of the brands. This is of especial interest, because nitrate of soda is the most quickly effective and the most thoroughly assimilated of any of the nitrogenous chemicals used in fertizers. More confidence can be placed in a fertilizer which contains from one fourth to one third of its nitrogen in nitrate of soda, than in one which contains only organic nitrogen.

All purchasers of fertilizers should note carefully the guaranteed percentages of nitrogen, soluble and available phosphoric acid and potash. Fertilizers with over 3 per cent. nitrogen, 8 per cent. available phosphoric acid and 6 per cent. potash, require more concentrated and better chemicals for their composition than the goods which have lower proportions of nitrogen and potash, and though the latter cost less, they are seldom as economical in their results. For example, 25 fertilizers had more than 2.5 per cent. nitrogen and all contained nitrate of soda. Twenty-seven contained less than 1.5 per cent. nitrogen, and only three of them had any nitrates in them. Such fertilizers would require stable manure in conjunction with them to give satisfaction.

COMPOSITION OF COMMERCIAL FERTILIZERS SAMPLED AND ANALYZED IN 1904.

Manufacturer and Brand.	Nitrogen.				Phosphoric Acid.							Potash.	
			Total.				Available.			Total.			
	Inorganic.	Organic.	Found.	Guaranteed.	Soluble.	Reverted.	Found.	Guaranteed.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.
AMERICAN AGRICULTURAL CHEMICAL CO.													
Bradley's Complete Manure for Top Dressing	4.26	.49	4.75	4.95	1.90	4.06	5.96	5.0	1.34	7.03	6.0	2.97	2.5
Bradley's Complete Manure for Potatoes and Vegetab's	1.70	1.84	3.54	3.30	3.95	4.57	8.52	8.0	1.38	9.90	9.0	7.91	7.0
Bradley's Complete Manure with 10 per cent. Potash	1.35	2.03	3.38	3.30	3.80	4.34	8.14	6.0	1.99	10.13	7.0	10.66	10.0
Bradley's Corn Phosphate	.51	1.47	1.98	2.06	6.40	4.00	10.40	8.0	1.73	12.13	10.0	1.75	1.5
Bradley's Eclipse Phosphate	.....	1.14	1.14	1.03	5.77	3.69	9.46	8.0	2.39	11.85	10.0	2.08	2.0
Bradley's Potato Fertilizer	.82	1.41	2.23	2.00	6.67	2.88	9.55	8.0	2.15	11.70	10.0	3.28	3.0
Bradley's Potato Manure	.59	1.94	2.53	2.50	5.69	2.69	8.38	6.0	2.41	10.79	8.0	6.89	5.0
Bradley's Seeding Down Manure	.89	1.71	2.60	2.50	5.98	4.39	10.37	9.0	1.93	12.30	11.0	2.09	2.0
Bradley's X. L. Superphosphate	.65	1.69	2.34	2.50	6.64	3.14	9.78	9.0	2.39	12.17	11.0	2.10	2.0
Clark's Cove Bay State Fertilizer G. G	.78	1.34	2.12	2.06	4.60	4.03	8.63	8.0	1.60	10.23	10.0	1.99	1.5
Clark's Cove Potato Fertilizer	.42	1.68	2.10	2.06	6.03	3.29	9.32	8.0	2.51	11.83	10.0	3.37	3.0
Cleveland Fertilizer for all Crops	.....	1.23	1.23	1.0	5.35	3.92	9.27	8.0	1.36	10.63	10.0	2.27	2.0
Cleveland Potato Phosphate	.65	1.32	1.97	2.06	6.39	2.78	9.17	8.0	2.48	11.65	10.0	3.39	3.0
Cleveland Superphosphate	.....	1.85	1.85	2.06	5.82	2.68	8.50	8.0	1.51	10.01	10.0	3.05	1.5
Crocker's Ammoniated Corn Phosphate	.72	1.68	2.40	2.0	5.40	5.32	10.72	8.0	1.11	11.83	10.0	1.78	1.5
Crocker's Grass and Oats Fertilizer	.....	.....	.....	.....	7.43	4.09	11.52	11.0	1.81	13.33	12.0	2.46	2.0
Crocker's New Rival Ammoniated Superphosphate	.....	1.11	1.11	1.03	6.13	3.07	9.20	8.0	1.36	10.56	10.0	2.11	2.0
Crocker's Potato, Hop and Tobacco	.67	1.47	2.14	2.00	7.15	2.43	9.58	8.0	1.97	11.55	10.0	3.24	3.0
Crocker's Potato Special	1.32	1.53	2.85	3.30	4.50	3.59	8.09	6.0	1.91	10.00	7.0	7.88	10.0
Cumberland Guano for all Crops	.....	1.23	1.23	1.03	6.29	2.77	9.06	8.0	2.23	11.29	10.0	3.39	2.0
Cumberland Potato Fertilizer	.51	1.45	1.96	2.06	5.20	4.02	9.22	8.0	2.56	11.78	10.0	3.38	3.0
Cumberland Superphosphate	.75	1.33	2.08	2.06	7.25	1.32	8.57	8.0	1.86	10.43	10.0	2.11	1.5
Darling's Blood, Bone and Potash	1.22	2.52	3.74	4.10	3.90	4.13	8.03	7.0	1.80	9.83	8.0	7.14	7.0

Darling's Farm Favorite	.22	1.70	1.92	2.06	5.83	2.73	8.56	8.0	1.89	10.45	9.0	3.70	3.0
Darling's General Fertilizer	.....	1.51	1.51	1.25	6.09	3.36	9.45	6.0	2.35	11.80	7.0	3.22	3.0
Darling's New Hampshire Special	1.88	1.34	3.22	3.30	3.45	4.99	8.44	8.0	1.39	9.83	9.0	7.12	5.0
Darling's Potato Manure	.73	1.88	2.61	2.50	4.58	2.91	7.49	6.0	2.71	10.20	8.0	6.38	5.0
Fine Ground Bone	.....	.....	2.53	2.47	.....	.....	.....	.....	.....	22.50	22.0	....	.....
Great Eastern Garden Special	1.05	2.06	3.11	3.30	5.00	4.66	9.66	8.0	1.54	11.20	9.0	7.14	7.0
Great Eastern General Fertilizer	.....	1.23	1.23	.82	5.80	3.68	9.48	8.0	1.24	10.72	10.0	4.67	4.0
Great Eastern Grass and Oats Fertilizer	.....	.....	.....	.....	6.75	2.96	9.71	11.0	2.29	12.00	12.0	2.41	2.0
Great Eastern Northern Corn Special	.70	1.52	2.22	2.00	4.10	5.22	9.32	8.0	2.53	11.85	10.0	1.85	1.5
Great Eastern Potato Manure	.64	1.47	2.11	2.06	6.65	2.95	9.60	8.0	1.80	11.40	10.0	3.37	3.0
High Grade Fertilizer with 10 per cent. Potash	.86	1.64	2.50	2.40	3.68	3.24	6.92	6.0	1.38	8.30	7.0	10.30	10.0
Nitrate of Soda	.....	.....	15.30	15.8	.....	.....	.....	.....	.....	.....	.....	.....	.....
Packer's Union Animal Corn Fertilizer	.68	1.96	2.64	2.50	7.20	1.98	9.18	9.0	3.29	12.47	11.0	2.45	2.0
Packer's Union Gardeners' Complete Manure	1.83	1.50	3.33	2.47	4.14	3.05	7.19	6.0	1.86	9.05	7.0	7.75	10.0
Packer's Union Potato Manure	.73	1.19	1.92	2.00	7.58	2.19	9.77	8.0	2.13	11.90	10.0	5.76	6.0
Packer's Union Universal Fertilizer	.....	1.10	1.10	.82	4.51	4.07	8.58	8.0	2.15	10.73	10.0	4.77	4.0
Packer's Union Wheat, Oats and Clover Fertilizer	.....	.....	.....	.....	6.60	4.40	11.00	11.0	1.98	12.98	12.5	2.37	2.0
Pacific Nobsque Guano	.....	1.32	1.32	1.03	4.80	3.59	8.39	8.0	2.01	10.40	10.0	2.33	2.0
Pacific Potato Special	.53	1.60	2.13	2.06	5.50	3.34	8.84	8.0	2.13	10.97	10.0	3.17	3.0
Quinnipiac Climax Phosphate for All Crops	.....	1.16	1.16	1.08	6.28	3.15	9.43	8.0	1.29	10.72	10.0	2.20	2.0
Quinnipiac Corn Manure	.68	1.69	2.37	2.06	4.73	4.62	9.35	8.0	2.49	11.84	10.0	2.14	1.5
Quinnipiac Dissolved Bone and Potash	.....	.....	.....	.....	7.29	3.16	10.45	10.0	1.62	12.07	11.0	2.36	2.0
Quinnipiac Potato Phosphate	.....	2.04	2.04	2.06	6.27	2.97	9.24	8.0	2.05	11.29	10.0	3.39	3.0
Read's Farmers' Friend	.48	1.57	2.05	2.08	6.14	2.72	8.86	8.0	2.54	11.40	10.0	3.31	3.0
Read's Potato Manure	1.07	1.39	2.46	2.07	3.83	3.02	6.85	6.0	2.00	8.85	7.0	8.15	10.0
Read's Practical Potato Special	.....	1.29	1.29	.82	2.91	2.73	5.64	4.0	1.34	6.98	5.0	6.43	6.0
Read's Standard Superphosphate	.....	.88	.88	.82	6.58	2.74	9.32	8.0	1.91	11.23	10.0	4.04	4.0
Read's Vegetable and Vine Fertilizer	.97	1.01	1.98	2.06	5.05	2.49	7.54	8.0	2.01	9.55	10.0	6.86	6.0
Soluble Pacific Guano	.84	1.19	2.03	2.06	5.17	3.45	8.92	8.0	1.48	10.40	10.0	1.88	1.5
Williams & Clark's Americus Corn Phosphate	.90	1.65	2.55	2.06	5.63	3.84	9.47	8.0	2.63	12.10	10.0	2.06	1.5
Williams and Clark's Americus Potato Manure	.45	1.57	2.02	2.06	7.42	2.28	9.70	8.0	2.04	11.74	10.0	3.19	3.0
Williams & Clark's Prolific Crop Producer	.16	1.15	1.31	.82	6.19	4.10	10.29	7.0	1.80	12.09	8.0	2.45	1.0
BOWKER FERTILIZER CO.													
Bowker's Market Bone	.....	.....	2.00	1.5	.....	.....	.....	.....	.....	23.53	26.0	.....	.....
Bowker's Corn Phosphate	.40	1.13	1.53	1.65	4.30	5.30	9.60	8.0	2.55	12.15	9.0	2.45	3.0
Bowker's Early Potato Manure	1.51	1.77	3.28	3.23	4.15	3.14	7.29	7.0	2.24	9 53	8.0	7.06	7.0
Bowker's Farm and Garden Phosphate	.50	1.22	1.72	1.50	5.18	3.41	8.59	8.0	1.75	10.34	10.0	2.20	2.0
Bowker's Hill and Drill Phosphate	.88	1.75	2.63	2.35	9.45	1.34	10.79	8.0	1.81	12.60	11.0	2.55	2.0
Bowker's Potato and Vegetable Fertilizer	.78	1.52	2.30	2.25	7.10	3.00	10.10	8.0	2.18	12.28	10.0	5.07	4.0
Bowker's Potato and Vegetable Phosphate	.43	1.20	1.63	1.50	5.68	3.49	9.17	9.0	2.18	11.35	11.0	2.43	2.0

COMPOSITION OF COMMERCIAL FERTILIZERS SAMPLED AND ANALYZED IN 1904.—*Continued.*

Manufacturer and Brand.	Nitrogen.				Phosphoric Acid.							Potash.	
			Total.				Available.			Total.			
	Inorganic.	Organic.	Found.	Guaranteed.	Soluble.	Reverted.	Found.	Guaranteed.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.
Bowker's Potash Bone	.21	.61	.82	.83	1.90	4.49	6.39	6.0	2.68	9.07	7.0	2.20	2.0
Superphosphate with Potash	.....	.....	.....	.....	5.19	5.13	10.32	10.0	2.58	12.90	11.0	1.13	1.0
Bowker's Sure Crop Phosphate	.....	1.11	1.11	1.65	5.63	3.06	8.69	8.0	1.76	10.45	9.0	2.23	2.0
Stockbridge Corn Manure	1.00	2.12	3.12	3.0	4.80	4.82	9 62	7.0	1.96	11.58	8.0	7.22	7.0
Stockbridge Potato Manure	1.21	1.88	3.09	3.0	4.23	3.63	7.86	6.0	2.34	10.20	7.0	10.58	10.0
Stockbridge Top Dressing Manure	2.82	2.30	5.12	4.25	3.13	3.02	6.15	4.0	1.68	7.83	6.0	5.68	6.0
E. Frank Coe Co.													
Coe's Columbia Corn Fertilizer	.14	1.62	1.76	1.20	9.18	1.17	10.35	8.5	1.80	12.15	10.0	2.84	2.5
Coe's Columbia Potato Fertilizer	.....	1.66	1.66	1.20	9.24	1.11	10.35	8.5	1.98	12.33	10.0	2.87	2.5
Coe's Grass and Grain Fertilizer	.....	1.18	1.18	·80	8.55	3.62	12.17	8.5	.56	12.73	10.0	2.42	1.5
Double Sulphate Potash and Magnesia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	25.70	.....
High Grade Diss. Bone and Potash	.....	.....	.....	.....	8.18	3.49	11.67	10.5	5.93	17.60	12.5	2.32	2.0
Coe's New England Corn Fertilizer	.18	1.12	1.30	2.06	9.70	.73	10.43	8.0	1.65	12.08	10.0	3.53	3.0
Coe's New England Potato Fertilizer	.....	1.26	1.26	.82	8.70	3.09	11.79	7.5	1.34	13.13	9.0	2.84	3.0
Coe's Special Potato Fertilizer	.56	1.46	2.02	1.65	8.05	1.23	9.28	8.0	.85	10.13	9.5	4.23	4.0
Coe's XXV Superphosphate	.....	1.01	1.01	.80	0.66	9.09	9.75	8.5	3.20	12.95	10.0	1.28	1.5
XXX Pure Ground Bone	.....	.....	2.57	.....	.....	.....	.....	.....	.....	24.90	.....	.....	.....
Lister's A. C. Works.													
Lister's Bone and Potash	.....	.....	.....	.....	7.10	2.96	10.06	10.0	2.19	12.25	11.0	2.20	2.0
Lister's High Grade Special	.71	.89	1.60	1.00	4.96	3.25	8.21	8.0	2.47	10.68	10.0	10.62	10.0
Lister's Oneida Special	.....	.91	.91	.82	5.67	2.64	8.31	7.0	1.18	9.49	9.0	1.49	1.0
Lister's Potato Manure	1.24	1.77	3.01	3.00	6.45	3.54	9.99	8.0	2.29	12.28	9.0	7.65	7.0
Lister's Special Corn Fertilizer	.46	1.38	1.84	1.65	6.13	3.60	9.73	8.0	1.95	11.68	9.0	3.71	3.0

Lister's Special Potato Fertilizer	.43	1.43	1.86	1.65	6.40	3.47	10.27	8.0	1.98	12.25	9.0	2.97	3.0
Lister's Success Fertilizer	.....	1.36	1.36	1.24	5.52	4.10	9.62	9.0	2.33	11.95	11.0	2.69	2.0
E. Mortimer & Co.													
Peruvian Guano	1.35	.80	2.15	2.25	.....	10.50	10.50	9.5	8.55	19.05	21.0	2.92	2.4
Lowell Fertilizer Co.													
Empress Brand	.....	1.43	1.43	1.23	6.28	1.59	7.87	7.0	.18	8.05	8.0	2.14	2.0
Swift's Lowell Animal Brand	.....	2.60	2.60	2.46	6.29	3.31	9.60	9.0	1 48	11.08	10.0	4.04	4.0
Swift's Lowell Bone Fertilizer	.....	1.74	1.74	1.64	5.50	4.20	9.70	8.0	1.60	11.30	9.0	3.09	3.0
Swift's Lowell Ground Bone	.....	.....	2.22	2.47	.....	.....	.....	.....	.....	26.70	25.0	.....	.....
Swift's Lowell Potato Manure	.....	1.84	1.84	1.61	5.22	2.47	7.69	7.0	.60	8.29	8.0	4.11	4.0
Swift's Lowell Potato Phosphate	.12	2.54	2.66	2.47	5.80	2.62	8.42	8.0	1.03	9.45	9.0	6.82	6.0
New England Fertilizer Co.													
New England Corn Phosphate	.....	1.63	1.63	1.64	4.90	3.57	8.47	8.0	1.11	9.58	9.0	4.61	3.0
New England Potato Fertilizer	.....	1.14	1.14	1.64	4.22	2.18	6.41	7.0	.66	7.07	8.0	1.93	4.0
Ohio Farmer Fertilizer Co.													
Ammoniated Bone and Potash	.....	.83	.83	.82	4.20	4.27	8.47	8.0	2.76	11.23	10.0	3.66	4.0
Corn Oats and Wheat Fish Guano	.19	.77	.96	1.24	2.62	6.35	8.97	8.0	2.31	11.28	10.0	2.03	2.0
General Crop Fish Guano	.....	.53	.53	.82	1.39	7.81	9.20	7.0	2.85	12.05	8.0	1.05	1.0
Parmenter & Polsey Fertilizer Co.													
"AA" Brand	1.45	2.02	3.47	4.50	3.55	3.95	7.50	7.0	2.10	9.60	8.0	8.61	8.0
Grain Grower Brand	.....	.72	.72	.82	2.83	4.94	7 77	7.0	4.28	12.00	8.0	2.52	2.0
Plymouth Rock Brand	.....	2.42	2.42	2.47	5.23	2.46	7.69	8.0	3.00	10.69	9.0	4.59	4.0
"P. and P." Potato Brand	.....	1.69	1.69	1.64	2.28	4.02	6.30	6.0	3.38	9.68	7.0	6.55	6.0
Special Potato Brand	.65	2.38	3.03	3.29	3.75	4.85	8.60	8.0	1.33	9.93	9 0	7.92	7.0
Star Brand	.....	1.38	1.38	1.64	1.05	7.27	8.32	7.0	2.43	10.75	8.0	2.79	2.5
Russia Cement Co.													
Essex A 1 Superphosphate	.....	1.23	1.23	1.00	1.75	6.43	8.18	7.0	3.95	12.13	9.0	1.46	2.0
Essex Corn Fertilizer	.57	1.96	2.53	2.00	3.94	5.50	9.44	9.0	3.38	12.82	11.0	3.77	3.0
Essex Complete Manure for Corn, Grain and Grass	.96	2.24	3.20	3.30	4.93	3.29	8.22	7.0	2.18	10.40	9.5	9.88	9.5

COMPOSITION OF COMMERCIAL FERTILIZERS SAMPLED AND ANALYZED IN 1904.

Manufacturer and Brand.	Nitrogen.				Phosphoric Acid.							Potash.	
			Total.				Available.			Total.			
	Inorganic.	Organic.	Found.	Guaranteed.	Soluble.	Reverted.	Found.	Guaranteed.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.
Essex Complete Manure for Potatoes, Roots and Vegt's	.87	2.77	3.64	3.70	6.20	3.96	10.16	7.0	2.52	12.68	9.0	8.52	8.5
Essex Market Garden and Potato Manure	.59	1.78	2.37	2.00	6.05	3.34	9.39	8.0	2.58	11.97	10.0	5.10	5.0
Essex XXX Fish and Potash	.54	2.02	2.56	2.00	2.95	5.93	8.88	9.0	2.61	11.49	12.0	3.00	2.25

Inorganic nitrogen is contained only in nitrates and ammonia salts, *i. e.*, nitrate of soda and sulphate of ammonia. It is the immediately available nitrogen. Organic nitrogen is the nitrogen contained in animal and vegetable matter, and is available in proportion to the rapidity of decay of the substances containing it.

FRED W. MORSE, *Chemist.*

639.73 N53 3 cop. 2
N. H. Exp. Sta.
Buls. 97-129
1903-1907.

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